



3 Rec'd PCT/PTO 31 JAN 2006

Docket No.: 0171-1205PUS1  
(PATENT)

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent Application of: Takuji YOSHIMOTO et al.

Application No.: 10/534,042

Confirmation No.: 2382

Filed: May 5, 2005

Art Unit: 1775

For: CHARGE-TRANSPORTING VARNISH

Examiner: Not Yet Assigned

**LETTER**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

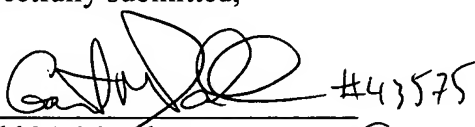
Sir:

Subsequent to the filing of the above-identified application on May 5, 2005, attached hereto is an English translation of the International Preliminary Examination Report (Form PCT/IPEA/409 prepared by the International Search Authority in connection with the parent application PCT/JP2003/014145) that should be made of record in the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or to credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Dated: **JAN 31 2006**

Respectfully submitted,

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**Translation**

**PATENT COOPERATION TREATY**

PCT/JP2003/014145



**PCT**

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>FAP-3752</b>	<b>FOR FURTHER ACTION</b> See Form PCT/IPEA/416	
International application No. <b>PCT/JP2003/014145</b>	International filing date (day/month/year) <b>06 November 2003 (06.11.2003)</b>	Priority date (day/month/year) <b>07 November 2002 (07.11.2002)</b>
International Patent Classification (IPC) or national classification and IPC <b>H05B 33/22, H05B 33/14// H01L 31/04, C09D 5/24, 201/00</b>		
Applicant <b>NISSAN CHEMICAL INDUSTRIES,LTD.</b>		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

a. ☐ (sent to the applicant and to the International Bureau) a total of \_\_\_\_\_ sheets, as follows:

☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) \_\_\_\_\_, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒ Box No. I Basis of the report

☐ Box No. II Priority

☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

☐ Box No. IV Lack of unity of invention

☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

☐ Box No. VI Certain documents cited

☐ Box No. VII Certain defects in the international application

☒ Box No. VIII Certain observations on the international application

Date of submission of the demand <b>15 April 2004 (15.04.2004)</b>	Date of completion of this report <b>12 August 2004 (12.08.2004)</b>
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP2003/014145

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This report is based on translations from the original language into the following language \_\_\_\_\_, which is language of a translation furnished for the purpose of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☒ The international application as originally filed/furnished
- ☐ the description:
- pages \_\_\_\_\_, as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the claims:
- pages \_\_\_\_\_, as originally filed/furnished
- pages\* \_\_\_\_\_, as amended (together with any statement) under Article 19
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the drawings:
- pages \_\_\_\_\_, as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP03/14145

**Box No. V** Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims	1-10	YES
	Claims		NO
Inventive step (IS)	Claims	5	YES
	Claims	1-4, 6-10	NO
Industrial applicability (IA)	Claims	1-10	YES
	Claims		NO

## 2. Citations and explanations (Rule 70.7)

Document 1: JP, 2001-52861, A (Sharp Corp.), 23 February, 2001 (23.02.01)

Document 2: JP, 2001-167878, A (Sharp Corp.), 22 June, 2001 (22.06.01)

Document 3: JP, 2002-151272, A (Nissan Chemical Industries, Ltd.), 24 May, 2002 (24.05.02)

Document 4: JP, 6-122277, A (Toshiba Corp.), 6 May, 1994 (06.05.94)

Document 5: JP, 6-32878, A (Showa Denko K.K.), 8 February, 1994 (08.02.94)

## Claims 1-4 and 6-9

The subject matters of these claims do not appear to involve an inventive step in view of documents 1-3 cited in the ISR.

Document 1 (especially claims 1 and 5, [0011], [0012], [0021]-[0023]) describes a coating solution consisting of a charge transporting polymer and a solvent (ethylene glycol, propylene glycol, triethylene glycol, cyclohexanol), and these solvents correspond to "the high viscosity solvent" of the present application (page 16 of the specification of the present application).

Furthermore, the document also describes a constitution in which an acceptor (corresponding to a positive hole-acceptable dopant), donor (corresponding to an electron-acceptable dopant) and viscosity regulator are added.

Document 2 describes a coating solution consisting of a charge transporting organic material with a weight average molecular weight of less than 600,000 and a solvent (ethylene glycol, propylene glycol, triethylene glycol), and also describes a constitution in which an acceptor, donor and viscosity regulator are added.

Furthermore, the document ([0011]) describes a technique in which the weight average molecular weight of the charge transporting organic material is decided considering the degrees of clogging and drying.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP03/14145

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

The particular compounds included in the "quinone diimine derivatives as oxidants represented by the general formula (1)" of claim 4 of the present application are unknown.

## Supplemental Box

In case the space in any of the preceding boxes is not sufficient.  
Continuation of: V.2

Document 3 describes a coating solution consisting of a charge transporting oligomer and a solvent, and discloses ethylene glycol as the coating solution ([0020]).

Furthermore, the oligomer of document 3 is the same compound as the oligoaniline derivative of claim 4 of the present application, and the document also describes the electron-acceptable dopant of claim 6 of the present application.

Moreover, a person skilled in the art could have easily decided the number average molecular weight, considering the solubility in the solvent and the ease of coating.

Furthermore, it is considered to be obvious for a person skilled in the art to apply the oligomer of document 3 as a charge transporting organic material to documents 1 and 2.

## Claim 10

The subject matter of this claim does not appear to involve an inventive step in view of documents 1-5 cited in the ISR.

Documents 4 and 5 describe a constitution in which a coating solution with a charge transporting agent dispersed in a solvent is used also for solar cells as well as for organic electroluminescence elements.

So, it is considered to be obvious for a person skilled in the art to also use the coating solution (varnish) obvious to the person skilled in the art from documents 1-3, for solar cells as described in documents 4 and 5.

## Claim 5

The subject matter of this claim appears to involve an inventive step in view of the documents cited in the ISR.

The constitution in which a 1,4-dithiin derivative represented by general formula (4) is used is neither described in any of the documents cited in the ISR nor obvious to a person skilled in the art.